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TRANSACTIONS

OF THE

KANSAS

ACADEMY OF SCIENCE.

VOL. XVIII.

EDITED BY THE SECRETARY.

CONTAINS

LIST OF OFFICERS, PAST AND PRESENT; MEMBERSHIP LIST JANUARY 6, 1903; HISTORICAL SKETCH OF THE ACADEMY; CONSTITUTION AND BY-LAWS; MINUTES OF THE THIRTY-FOURTH AND THIRTY-FIFTH ANNUAL MEETINGS; AND SOME PAPERS READ.

TOPEKA, KANSAS:
W. Y. MORGAN, STATE PRINTER.
1903.

Officers of the Academy for 1903.

President	J. C. COOPER	Topeka, Kan.
Vice-president	EDWARD BARTOW	Lawrence, Kan.
Vice-president	J. A. YATES	Ottawa, Kan.
Treasurer	ALVA J. SMITH	Emporia, Kan.
Secretary	G. P. GRIMSLEY	Topeka, Kan.

Past Officers of the Academy.

PRESIDENTS.

1869, '70	B. F. Mudge.
1871-'73	John Fraser.
1874-'78	F. H. Snow.
1879, '80	B. F. Mudge.
1881, '82	J. T. Lovewell.
1883	Dr. A. H. Thompson.
1884, '85	R. J. Brown.
1886	E. L. Nichols.
1887	J. D. Parker.
1888	J. R. Mead.
1889	T. H. Dinsmore, jr.
1890	G. H. Failyer.
1891	Robert Hay.
1892	E. A. Popenoe.
1893	E. H. S. Bailey.
1894	L. E. Sayre.
1895	Warren Knaus.
1896	D. S. Kelly.
1897	S. W. Williston.
1898	D. E. Lantz.
1899	E. B. Knerr.
1900	A. S. Hitchcock.
1901	E. Miller.
1902	J. T. Willard.

VICE-PRESIDENTS.

1869, '70	J. S. Whitman.
1871	B. F. Mudge.
1872, '73	B. F. Mudge, Dr. R. J. Brown.
1874	J. A. Banfield, J. D. Parker.
1875	B. F. Mudge, J. D. Parker.
1876, '77	B. F. Mudge.
1878	B. F. Mudge, J. H. Carruth.
1879-'82	J. H. Carruth, Joseph Savage.
1883	J. R. Mead, G. E. Patrick.
1884	F. H. Snow, Joseph Savage.
1885	E. L. Nichols, G. H. Failyer.
1886	J. D. Parker, N. S. Goss.
1887	J. R. Mead, E. H. S. Bailey.
1888	E. H. S. Bailey, T. H. Dinsmore, jr.
1889	E. H. S. Bailey, G. H. Failyer.
1890	D. S. Kelly, F. W. Cragin.
1891	F. W. Cragin, O. C. Charlton.
1892	F. O. Marvin, Mrs. N. S. Kedzie.
1893	J. T. Willard, E. B. Knerr.
1894	I. D. Graham, J. D. Hewitt.
1895	I. D. Graham, S. W. Williston.
1896	S. W. Williston, D. E. Lantz.
1897	D. E. Lantz, A. S. Hitchcock.
1898	C. S. Parmenter, L. C. Wooster.
1899	A. S. Hitchcock, J. R. Mead.
1900	Ephraim Miller, J. C. Cooper.
1901	J. C. Cooper, L. C. Wooster.
1902	Edward Bartow, J. A. Yates.

SECRETARIES.

1869-'73	J. D. Parker.
1874, '75	John Wherrell.
1876, '77	Joseph Savage.
1878-'89	E. A. Popenoe.
1890-'92	E. H. S. Bailey.
1893	A. M. Collette.
1894-'98	E. B. Knerr.
1899-'01	D. E. Lantz.
1902—	G. P. Grimsley.

TREASURERS.

1869-'73	F. H. Snow.
1873-'75	R. J. Brown.
1876, '77	W. K. Kedzie.
1878-'83	R. J. Brown.
1884, '85	A. H. Thompson.
1886-'90	I. D. Graham.
1891	F. O. Marvin.
1892-'95	D. S. Kelly.
1896	L. E. Sayre.
1897-'00	J. W. Beede.
1901-'02	E. C. Franklin.

Membership of the Academy,

January 6, 1903.

HONORARY MEMBERS, elected in 1897.

Rev. Johns D. Parker, post chaplain	East Orange, N. J.
Arnold B. Johnson, United States Lighthouse Board	Washington, D. C.
W. A. Kellerman, Ph. D., Ohio State University	Columbus, Ohio.
Edw. L. Nichols, Ph. D., Cornell University	Ithaca, N. Y.
W. S. Franklin, Sc. D., Lehigh University	South Bethlehem, Pa.
S. W. Williston, Ph. D., University of Chicago, 1902	Chicago, Ill.

ASSOCIATE MEMBERS, elected in 1897.

Mrs. Mary E. Mudge	Manhattan.
Mrs. Mary Savage	Lawrence.

LIFE MEMBERS.

Dates printed in the following list signify date of election to membership in the Academy.

E. H. S. Bailey, Ph. D., 1883, University of Kansas	Lawrence.
S. A. Baldwin, 1879	Wabaunsee.
F. W. Cragin, M. S., 1880, Colorado College	Colorado Springs.
L. L. Dyche, M. S., 1881, University of Kansas	Lawrence.
E. C. Franklin, Ph. D., 1884, University of Kansas	Lawrence.
I. D. Graham, 1879	Topeka.
Warren Knaus, M. S., 1884	McPherson.
J. T. Lovewell, Ph. D., 1878	Topeka.
F. O. Marvin, C. E., 1884, University of Kansas	Lawrence.
Peter McVicar, D. D., 1868, Washburn College	Topeka.
J. R. Mead, 1879	Wichita.
Ephraim Miller, Ph. D., 1873, University of Kansas	Lawrence.
E. A. Popenoe, A. M., 1872, Kansas Agricultural College,	Manhattan.
L. E. Sayre, Ph. M., 1885, University of Kansas	Lawrence.
B. B. Smyth, 1880, State Museum	Topeka.
F. H. Snow, Ph. D., 1868, University of Kansas	Lawrence.
A. H. Thompson, D. D. S., 1873	Topeka.
D. M. Valentine, LL. D., 1878	Topeka.
M. L. Ward, D. D., 1880, Ottawa University	Ottawa.
J. T. Willard, M. S., 1883, Kansas Agricultural College	Manhattan.
S. W. Williston, Ph. D., 1880, University of Chicago	Chicago, Ill.

ACTIVE MEMBERS.

Geo. I. Adams, Ph. D., 1897, U. S. Geological Survey	Washington, D. C.
Orr Adams, 1898	Telluride, Colo.
L. D. Arnold, 1899, Salina Normal University	Salina.
Harvey W. Baker, 1902	Topeka.
F. D. Barker, 1901, Ottawa University	Ottawa.
Elam Bartholomew, M. S., 1895	Stockton.
Edward Bartow, Ph. D., 1897, University of Kansas	Lawrence.

ACTIVE MEMBERS.

Wm. C. Bauer, A. M., 1897, Baker University ..... Baldwin.
J. W. Beede, Ph. D., 1894, University of Indiana..... Bloomington, Ind.
Edw. Bumgardner, M. D., 1896..... Lawrence.
F. W. Bushong, B. S., 1896, Kansas City University..... Kansas City, Kan.
Chas. S. Caldwell, 1895 ..... Costa Rica.
H. W. Charles, 1899, Superintendent of Reform School... Topeka.
T. D. A. Cockerell, Ph. D., 1895..... Las Vegas, N. M.
Clarence L. Cole, M. D., 1902, Kansas Medical College... Topeka.
J. C. Cooper, 1899 ..... Topeka.
F. F. Crevecœur, 1899 ..... Onaga.
F. B. Dains, Ph. D., 1902, Washburn College..... Topeka.
John S. Dawson, 1899..... Hill City.
R. B. Dunlevy, B. S., 1896, Southwest Kansas College... Winfield.
B. F. Eyer, B. S., 1894, Kansas Agricultural College..... Manhattan.
Geo. H. Failyer, Ph. D., 1901, Department of Agriculture, Washington, D. C.
A. O. Garrett, 1901, high school..... Salt Lake City, Utah.
G. P. Grimsley, Ph. D., 1895, Washburn College..... Topeka.
C. F. Gustafson, 1899, University of Kansas..... Lawrence.
H. J. Harnly, B. S., 1893, McPherson College..... McPherson.
J. Arthur Harris, 1900..... St. Louis, Mo.
W. A. Harshbarger, B. S., 1902, Washburn College ..... Topeka.
Leon W. Hartman, 1901..... Manhattan.
E. H. Heacock, B. S., 1896, high school ..... Topeka.
W. E. Henderson, 1901, high school..... Iola.
A. S. Hitchcock, M. S., 1892, Department of Agriculture, Washington, D. C.
Ross Hopkins, 1898, Johns Hopkins University ..... Baltimore, Md.
Geo. W. Hoxie, M. D., 1902, University of Kansas ..... Lawrence.
Thos. M. Iden, 1897, State Normal School..... Emporia.
F. B. Isely, 1902, high school..... Wichita.
T. B. Jennings, United States Weather Bureau..... Topeka.
John J. Jewett, 1902..... Topeka.
Carl Johns, 1900, Bethany College..... Lindsborg.
A. W. Jones, B. S., 1894, Kansas Wesleyan University... Salina.
Hugo Kahl, 1897, Carnegie Museum..... Pittsburg, Pa.
W. H. Keller, 1898..... Wetmore.
E. B. Knerr, Sc. D., 1889, Midland College..... Atchison.
D. E. Lantz, M. S., 1887, Kansas Agricultural College ... Manhattan.
Pierce Larkin, 1902, University of Oklahoma ..... Norman, Okla.
H. T. Martin, 1902, University of Kansas..... Lawrence.
R. Matthews, D. D. S., 1898 ..... Wichita.
Elmer V. McCollum, 1902, University of Kansas..... Lawrence.
Edith A. McIntyre, B. S., Kansas Agricultural College.. Manhattan.
S. G. Mead, 1899.. ..... McPherson.
Grace R. Meeker, 1899..... Ottawa.
Mrs. A. H. Merrell, 1898 ..... Los Angeles, Cal.
Elmer P. Monahan, 1901, Baker University..... Baldwin.
L. N. Morscher, 1900..... Lawrence.
J. H. Newby, 1899..... Osage City.
A. M. Nissen, A. M., 1888, public schools..... Wetmore.
D. H. Otis, M. S., 1897, Kansas Agricultural College..... Manhattan.
W. K. Palmer, M. E., 1897, consulting engineer..... Kansas City, Mo.

ACTIVE MEMBERS.

Norman Plass, 1902, president of Washburn College..... Topeka.
S. F. Poole, B. S., 1902, Fairmount College..... Wichita.
C. L. Pribble..... Topeka.
J. M. Price, jr., B. S., 1900..... Atchison.
C. S. Prosser, M. S., 1892, Ohio State University ..... Columbus, Ohio.
W. F. Rice, 1902, public schools..... Richmond.
Arthur Ringer, 1902, county high school..... Effingham.
J. H. Schaffner, B. S., 1902, Ohio State University..... Columbus, Ohio.
E. H. Sellards, B. S., 1900, Yale University..... New Haven, Conn.
C. H. Shattuck, 1899, Campbell University..... Holton.
J. L. Shearer, 1902, public schools..... Halstead.
E. T. Shelley, M. D., 1892..... Atchison.
Alva J. Smith, 1893..... Emporia.
Eugene G. Smyth, 1901..... Topeka.
Chas. H. Sternberg, 1895..... Lawrence.
Teresa Stevenson, 1901..... Ottawa.
R. S. Sherwin, 1901, University of Oklahoma .... Norman, Okla.
F. J. Titt, B. S., 1898, Kingfisher College..... Kingfisher, Okla
C. D. Weaver, M. D., 1902..... McPherson.
Geo. F. Weida, Ph. D., 1897, Kansas Agricultural College, Manhattan.
J. E. Welin, 1899, Bethany College..... Lindsborg.
J. M. Westgate, 1900, University of Chicago..... Chicago, Ill.
E. M. Williams, 1901..... Wichita.
H. I. Woods, M. S., 1902, Washburn College..... Topeka.
L. C. Wooster, 1897, State Normal School..... Emporia.
J. A. Yates, Ph. D., 1898, Ottawa University ..... Ottawa.

ADDRESSES DELIVERED AND PAPERS READ

BEFORE THE

KANSAS ACADEMY OF SCIENCE,

AT

IOLA, 1901.

TOPEKA, 1902.

I.—Presidential Addresses.

II.—Chemical and Physical Papers.

III.—Geological Papers.

IV.—Biological Papers.

V.—Miscellaneous Papers.

VI.—Necrology.

VII.—Announcements, Library Accession List, and General Index.

I.

PRESIDENTIAL ADDRESSES.

"SCIENCE AND THE NINETEENTH CENTURY."
By PROF. EPHRAIM MILLER, of the University of Kansas, Lawrence.

"THE MISSION AND LIMITATIONS OF SCIENCE."
By PROF. J. T. WILLARD, of the Kansas Agricultural College, Manhattan.

II.

CHEMICAL AND PHYSICAL PAPERS.

"A Study of Dietaries at Lawrence, Kan."
By E. H. S. Bailey, of the University of Kansas, Lawrence.

"Crystalline Liquids."
By Fred B. Porter, of the University of Kansas, Lawrence.

"Some Kansas Petroleum."
By Edward Bartow and Elmer V. McCollum, of the University of Kansas, Lawrence.

"The Composition and Digestibility of Prairie Hay and of Buffalo-grass Hay."
By J. T. Willard and R. W. Clothier, of the Kansas Agricultural College, Manhattan.

"Distinguishing Red and White Oak Lumber by Chemical Analysis of their Ash."
By E. B. Knerr, of Midland College, Atchison.

"On the Alkyl Sulphates."
By F. W. Bushong, of Kansas City College, Kansas City, Kan.

"Some Sandstone Waters of Great Purity."
By E. H. S. Bailey, of the University of Kansas, Lawrence.

III.

GEOLOGICAL PAPERS.

"THE SPANISH PEAKS."
By J. J. JEWETT, Topeka.

"ECONOMIC GEOLOGY OF IOLA AND VICINITY."
By G. P. GRIMSLEY, Washburn College, Topeka.

"NOTES ON THE GEOLOGY OF THE ANTELOPE HILLS."
By R. S. SHERWIN, University of Oklahoma, Norman, Okla.

"NOTES ON THE THEORIES OF ORIGIN OF GYPSUM DEPOSITS."
By R. S. SHERWIN, University of Oklahoma, Norman, Okla.

"EXPERIENCES WITH EARLY MAN IN AMERICA."
By CHARLES H. STERNBERG, Lawrence.

"THE PERMIAN LIFE OF TEXAS."
By CHARLES H. STERNBERG, Lawrence.

"GEOLOGY OF LYON COUNTY, KANSAS."
By ALVA J. SMITH, Emporia.

"FURTHER STUDIES OF THE MENTOR BEDS."
By ALFRED W. JONES, Kansas Wesleyan University, Salina.

"THE OTTAWA GAS-WELLS."
By J. A. YATES, Ottawa University, Ottawa.

"PHYSIOGRAPHIC DIVISIONS OF KANSAS."
By GEO. I. ADAMS, Washington, D. C.

"LIST OF FOSSIL PLANTS COLLECTED IN VICINITY OF ONAGA, KAN."
By F. F. CREVECŒUR, Onaga.

"GOLD IN KANSAS." (Two papers.)
By J. T. LOVEWELL, Topeka.

IV.

BIOLOGICAL PAPERS.

"Loco Weed."
By L. E. Sayre, of the University of Kansas, Lawrence.

"Notes on the Trees, Shrubs and Vines in the Southern Part of the Cherokee Nation."
By C. N. Gould, of the University of Oklahoma, Norman, Okla.

"A Provisional List of the Uredineæ of Bourbon County, Kansas."
By A. O. Garrett, Salt Lake City, Utah.

"Statistics about Kansas Birds."
By D. E. Lantz, Manhattan.

"Notes on the Birds of Kansas."
By Dr. F. H. Snow, of the University of Kansas, Lawrence.

"A New Species of Fish."
By F. F. Crevecœur, Onaga.

"Notes on the Food Habits of California Sea-lions."
By L. L. Dyche, of the University of Kansas, Lawrence.

"Food Habits of the Common Garden Mole."
By L. L. Dyche, of the University of Kansas, Lawrence.

"List of Insects Collected in Hamilton and Morton Counties, Kansas."
By Dr. F. H. Snow, of the University of Kansas, Lawrence.

"Additions to the List of Kansas Coleoptera for 1901 and 1902."
By W. Knaus, McPherson.

"A Preliminary List of the Diptera of Kansas."
By Dr. F. H. Snow, of the University of Kansas, Lawrence.

"List of Insects Collected in Arizona."
By Dr. F. H. Snow, of the University of Kansas, Lawrence.

"Preliminary List of Medicinal and Economic Plants in Kansas."
By B. B. Smyth, Topeka.

V.

MISCELLANEOUS PAPERS.

"The Drying-up of Pools and Streams in Central Kansas."
By S. G. Mead, McPherson.

"Origin of Names of Kansas Streams."
By J. R. Mead, Wichita.

"Loss of Teeth as a Disqualification for Military Service."
By Edward Bumgardner, Lawrence.

"On Certain Methods of the Geometry of Position."
By Arnold Emch, Boulder, Colo.

"The Eleven-and-one-half-inch Equatorial Telescope at Washburn College Observatory."
By H. L. Woods, Washburn College, Topeka.

"Review of the Crop Season of 1902."
By T. B. Jennings, Topeka.

VI.

NECROLOGY.

Col. N. S. Goss,

Dr. Geo. T. Fairchild,

Davis A. Boyles.

VII.

APPENDIX.

ACCESSIONS TO THE ACADEMY LIBRARY, 1901 and 1902.

GENERAL INDEX TO THE ACADEMY TRANSACTIONS, 1872 to 1900.

INDEX TO VOLUME XVIII (1903).

ADVERTISEMENT OF VOLUMES ISSUED BY THE ACADEMY.

ANNOUNCEMENTS BY THE SECRETARY.

ADDITIONS TO LIST OF MEMBERS.